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metal layer; a CMR layer; a second refractory metal layer; and a second oxidation resistive layer.

A method of fabricating a multi-layer electrode RRAM memory cell includes preparing a silicon substrate; forming a junction in the substrate taken from the group of junctions consisting of N⁺ junctions and P⁺ junctions; depositing a metal plug on the junction; depositing a first oxidation resistant layer on the metal plug; depositing a first refractory metal layer on the first oxidation resistant layer; depositing a CMR layer on the first refractory metal layer; depositing a second refractory metal layer on the CMR layer; depositing a second oxidation resistant layer on the second refractory metal layer; and completing the RRAM memory cell.

It is an object of the invention to provide a reliable electrode to improve device reliability and device endurance, and which is capable of being produced economically.

Another object of the invention is to provide a multi-layer electrode which is oxidation resistant.

A further object of the invention is to provide a metal electrode for an RRAM.

This summary and objectives of the invention are provided to enable quick comprehension of the nature of the invention. A more thorough understanding of the invention may be obtained by reference to the following detailed description of the preferred embodiment of the invention in connection with the drawings.

Brief Description of the Drawings

Fig. 1 depicts resistance properties of an RRAM memory cell.

Fig. 3 depicts the RRAM multi-layer electrode of the invention.

Fig. 4 is a block diagram of the method of the invention.